Able Acoustics

BAILEY GARNER LLP

ROSE AVENUE, GRAVESEND

ACOUSTIC ASSESSMENT

AUGUST 2025

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P1661/02	***August 2025***	***Position***	***Signature***
Prepared By:	*Edward Crofton-Martin*	*Principal Acoustic Consultant*	
Checked By:	*Edward Crofton-Martin*	*Principal Acoustic Consultant*	
Approved By:	*Edward Crofton-Martin*	*Principal Acoustic Consultant*	

Able Acoustics Limited
Kent House
81 Station Road
Ashford
Kent
TN23 1PP
www.ableacoustics.com
info@ableacoustics.com

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1. INTRODUCTION

1.1 Introduction

1.1.1 Approval is sought to redevelop the site at Rose Avenue, Gravesend, Kent, DA12 2LN for residential use.

1.1.2 Bailey Garner LLP acting on behalf of Gravesham Borough Council has instructed Able Acoustics Ltd to carry out an acoustic assessment to inform the application and this report presents the monitoring undertaken, the results of the assessment and suitable suggestions for mitigation where applicable.

1.2 Revision History

1.2.1 This revision has been prepared to accommodate the latest site layout drawing dated 01st August 2025 (Figure 02). The revision has no bearing on the outcome of the original assessment.

2. NOISE UNITS AND STANDARDS

2.1 General

2.1.1 The range of audible sound is from 0 dB to 140 dB and a range of typical levels is presented in Table 2.1 below. Noise is a subjective term and can be defined as unwanted sound.

Table 2.1 Typical Sound Levels

Sound Pressure Level dB(A)	Source	Subjective Level
130 - 140	Jet (at 10m)	Threshold of pain
120 – 130	Pneumatic Drill (at 1m)	Extremely Loud
110 – 120	Loud Car Horn (at 1m)	Very Loud
100 – 110	Alarm Bell (at 1m)	Very Loud
80 – 90	Inside General Factory	Loud
70 – 80	Average Traffic (on street corner)	Loud
60 – 70	Conversational Speech	Moderate
50 – 60	Typical Business Offices	Moderate
40 – 50	Living-room Urban Area	Quiet
30 – 40	Library	Quiet
20 – 30	Bedroom (at night)	Very Quiet
10 - 20	Broadcasting Studio	Very Quiet

2.1.2 For variable sound sources a difference of 3 dB(A) is just distinguishable. For road traffic or railway sound sources, a doubling of traffic flow will increase the overall noise by 3 dB(A). The "loudness" of a sound is a purely subjective parameter, but it is generally accepted that an increase/decrease of 10 dB(A) corresponds to a doubling/halving in perceived loudness.

2.1.3 The frequency response of the ear is usually taken to be about 20 Hz (number of oscillations per second) to 20 kHz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the measuring instrument. The weighting which is most widely used and which correlates best with subjective response to sound is the dB(A) weighting. This is an internationally accepted standard for environmental sound measurements.

2.1.4 External sound levels are rarely steady, but rise and fall according to activities within an area at any given time. In an attempt to produce a figure that relates this variable sound level to subjective response, a number of indices have been developed. These include:

i) *$L_{Aeq,T}$ Sound Level*

This is the "equivalent continuous A-weighted sound pressure level, in decibels", and is defined in British Standard BS 7445 [1] as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe sound attributable to construction and

sound from industrial premises and is the most suitable unit for the description of other forms of environmental sound. In simpler terms, it is a measure of energy within the varying sound.

ii) *The L_{Amax} level*

This is the maximum level recorded over the measurement period.

iii) The L_{A10} level

This is the level that is exceeded for 10% of the measurement period and gives an indication of the *louder* levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise. In the United Kingdom the $L_{A10,\ 18hour}$ level has been adopted as the standard reference metric for sound from road traffic sources.

2.2 National Planning Policy

2.2.1 The National Planning Policy Framework (NPPF) updated 12th December 2024 [2] provides guidance on noise and planning issues. The purpose of this document is to help achieve sustainable development.

2.2.2 In Section 187, The NPPF states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability."

2.2.3 In Section 198, The NPPF states:

"198. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life[72];

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."

2.2.4 In Section 200, The NPPF continues to state:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of

development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

2.2.5 Footnote 72 of Section 198 makes reference to The Noise Policy Statement for England (NPSE) [3]. Since March 2010 NPSE applies to all forms of noise including environmental noise, neighbour noise and neighbourhood noise.

2.2.6 The NPSE sets out the long term vision for Government noise policy which is to:

"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

This is supported by the following aims:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life."*

2.2.7 The first aim of the NPSE should be read in the context of Government policy on sustainable development indicating that significant adverse effects on health and quality of life should be avoided while accommodating the principles of sustainable development.

2.2.8 The second aim of the NPSE is applicable where the impact falls between LOAEL and SOAEL (see below) requiring that all reasonable measures to mitigate and minimise adverse impacts on health and quality of life be implemented while accommodating the principles of sustainable development. This does not imply that any adverse effects cannot occur.

2.2.9 The third aim of the NPSE is to actively improve health and quality of life through effective management of noise within the context of Government policy on sustainable development where ever it is possible and reasonable to do so.

2.2.10 The NPSE applies the following concepts adapted from toxicology:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

2.2.11 It should be noted that there are no numerical values for these concepts defined in the NPSE. There is also no single objective noise-based measure that defines Observed Effect Levels that is applicable to all sources of noise in all situations and, consequently, the levels are likely to be different for different noise sources, for different receptors and at different times.

2.3 Local Policy

2.3.1 The Gravesham Borough Council (GBC) document: Local Plan Core Strategy adopted 2014 [4] contains the following policy

"Policy CS19: Development and Design Principles

5.15.14 New development will be visually attractive, fit for purpose and locally distinctive. It will conserve and enhance the character of the local built, historic and natural environment, integrate well with the surrounding local area and meet anti-crime standards. The design and construction of new development will incorporate sustainable construction standards and techniques, be adaptable to reflect changing lifestyles, and be resilient to the effects of climate change. This will be achieved through the criteria set out below:"

The relevant criterion is as follows:

"…New development will be located, designed and constructed to:

• avoid adverse environmental impacts from pollution, including noise, air, odour and light pollution, and land contamination;…"

2.4 Standards and Guidance

2.4.1 Guidance on sound levels is provided in Table 4 of British Standard (BS) 8233 [5]. With regard to residential accommodation, the following guidance is given:

Table 2.2: Indoor Ambient Noise Levels In Spaces When They Are Unoccupied

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,\ 16hour}$	-
Dining	Dining room/area	40 dB $L_{Aeq,\ 16hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,\ 16hour}$	30 dB $L_{Aeq,\ 8hour}$

2.4.2 The levels shown in Table 4 of BS 8233 are based on the existing guidelines issued by the World Health Organisation (WHO) and assume normal diurnal fluctuations in external noise.

2.4.3 The World Health Organisation has produced guidance on noise limits which should prevent the onset of sleep disturbance [6]. The WHO guidelines state:

"When noise is continuous, the equivalent sound pressure level should not exceed 30 dB(A) indoors, if negative effects on sleep are to be avoided…..Indoor guideline values for bedrooms are 30 dB LAeq for continuous noise and 45 dB LAmax for single sound events."

2.4.4 The guidance given by the WHO therefore is consistent with internal noise levels as specified by BS 8233 at night and it is recommended, that internal noise levels within the proposed residential accommodation should not exceed 30 dB $L_{Aeq,\ 8hr}$ and 45 dB $L_{Amax,\ F}$ at night. During the daytime, noise levels within living rooms and bedrooms should not exceed 35 dB $L_{Aeq,\ 16hr}$. However, it should be noted that BS 8233:2014 also provides the following informative note:

"Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved."

2.4.5 The internal noise level within a dwelling is dependent on the noise level arriving at the external facade of the dwelling, the sound insulation properties of the dwelling (wall and window construction) and the size and furnishings in the rooms. The prediction of internal levels is therefore a complex process, dependent upon many factors.

2.4.6 In the absence of specific guidance on L_{Amax} levels during the night in BS 8233:2014 supplementary guidance on night time L_{AMax} events is given in the ANC[1], IOA[2] and CIEH[3] joint issue document: Professional Practice Guidance on Planning & Noise (ProPG) [7] which is aimed at new residential development. The guidance recommends that in most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used to ensure that individual noise events do not normally exceed 45dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events. It is further noted that Appendix A of the ProPG guidance notes that physiological awakenings (as distinct from behavioural awakenings) of which the individual may neither be aware at the time nor recall the next day, may occur where events of 55dB L_{AMax} were present.

2.4.7 BS 8233:2014 also states the following:

*"**Design criteria for external noise***

For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T,}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the

[1] Association of Noise Consultants
[2] Institute of Acoustics
[3] Chartered Institute of Environmental Health

convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens and terraces, which might be intended to be used for relaxation. In high-noise areas, consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55 dB $L_{Aeq,T}$ or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space."

2.4.8 The Association of Noise Consultants and Institute of Acoustics joint publication: Acoustics Ventilation and Overheating, Residential Design Guide (AVO Guide) aims to reconcile potentially competing demands of sound insulation and ventilation [8].

2.4.9 The AVO Guide assumes the acoustician is appointed at the design stage[4] and provides advice on addressing how:

- The ventilation strategy impacts on the acoustic conditions.
- The strategy for mitigating overheating impacts on the acoustic conditions, and whether a more detailed overheating assessment is required to inform this.

2.4.10 Appendix B of the document provides specific guidance to:

- Help acousticians prepare suitable advice for developers and their design teams so that informed decisions can then be made on how best to progress designs.
- Assist local planning authorities to seek evidence of appropriate design details and of post-completion verification, to comply with suitably-worded planning conditions.
- Enable a consistent and practical approach to considering noise impact under different ventilation and overheating conditions.
- Outline where there is evidence for risks of adverse noise effects and the need for balanced consideration with other aspects of indoor environmental quality when developing the design of new homes.

2.4.11 The AVO Guide provides a two-step approach based on external levels. Table B.8 reproduced as Table 2.3 below outlines the metrics to be used.

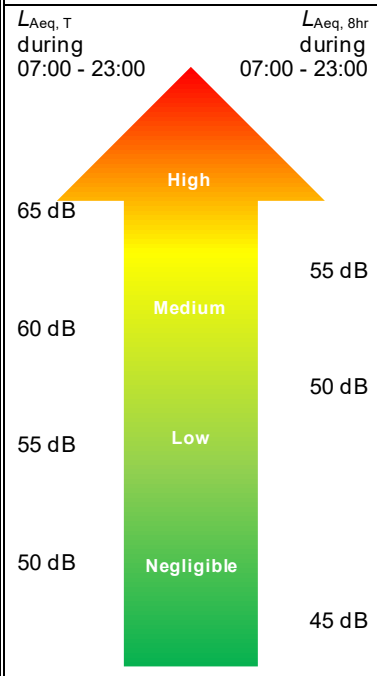
[4] It is not the role of the acoustic practitioner to advise on the strategy for mitigating overheating. However, where relevant, the acoustic practitioner is encouraged to communicate to the design team and developer any acoustic benefit of reducing heat gains or increasing thermal mass.

Table 2.3 Design Level Metrics

External Free-field Noise Levels	Description
Daytime $L_{Aeq,16h}$, dB	Daytime value 07:00 – 23:00
Night-time $L_{Aeq,8h}$, dB	Night time value 23:00 – 07:00
Ventilation design case Night-time L_{AFmax}, dB	This is the Night time level that is not normally exceeded more than 10 times per night
Overheating design case Night-time L_{AFmax},dB	This is the Night-time L_{AFmax}, level that is not normally exceeded. (highest typical level)

2.4.12 Table 3.2 of the AVO Guide (reproduced below) provides guidance for a site risk assessment of noise from transport noise sources relating to overheating. However, the values are not fixed thresholds and assume where 78dB L_{AFmax} is normally exceeded during the night a level 2 assessment is recommended.

Table 2.4 Guidance for Level 1 site risk assessment of noise from transport noise sources relating to overheating condition

Risk category for Level 1 assessment	Potential Effect without Mitigation	Recommendation for Level 2 assessment
		Recommended Optional
	Use of opening windows as primary means of mitigating overheating is not likely to result in adverse effect	Not required

2.4.13 Where a level 2 assessment is required the AVO Guide provides the following guidance in the table below.

Table 2.5 Guidance for Level 2 site risk assessment of noise from transport noise sources relating to overheating condition

Internal Ambient Noise Level			Examples of Outcomes	
$L_{Aeq,T}$ during 07:00-23:00	$L_{Aeq,8hr}$ during 23:00-07:00	Individual noise events during 23:00–07:00		
>50dB	>42dB	Normally exceeds 65 dB $L_{AF,max}$	Noise causes a material change in behaviour e.g. having to keep windows closed most of the time	Avoiding certain activities during periods of intrusion. Having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.
			Increasing likelihood of impact on reliable speech communication during the day or sleep disturbance at night	At higher noise levels, more significant behavioural change is expected and may only be considered suitable if occurring for limited periods. As noise levels increase, small behaviour changes are expected e.g. turning up the volume on the television; speaking a little more loudly; having to close windows for certain activities, for example ones which require a high level of concentration. Potential for some reported sleep disturbance. Affects the acoustic environment inside the dwelling such that there is a perceived change in quality of life. At lower noise levels, limited behavioural change is expected unless conditions are prevalent for most of the time.
≤ 35 dB	≤ 30 dB	Do not normally exceed $L_{AF,max}$ 45 dB more than 10 times a night	Noise can be heard, but does not cause any change in behaviour	Noise can be heard, but does not cause any change in behaviour, attitude, or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.

2.5 Informative

2.5.1 Approved Document O (ADO) of the Building Regulations [9] refers to overheating and directs the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (23:00 – 07:00) and provides target thresholds above which an overheating assessment will be required as follows:

"Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).

b. 55dB L_{AFmax}, more than 10 times a night (between 11pm and 7am)."

3. SITE LAYOUT

3.1 Overview

3.1.1 The application site is located at: Rose Avenue, Gravesend, Kent, DA12 2LN and the site location is shown in Figure 01.

3.1.2 The site is located in a suburban environment on the north side of Rose Avenue and is bounded by Riverside Family Hub/Community centre to the north, residential properties on Ingoldsby Road to the east, Rose Avenue to the south and residential properties on Rose Avenue and Dickens Road to the west.

3.1.3 The site layout proposes residential use, specifically: 29 affordable homes.

3.1.4 The proposed layout is shown on Figure 02.

4. MEASUREMENTS

4.1 General

4.1.2 To establish existing levels at site attended monitoring undertaken on two occasions.

4.2 Measurement Procedure

4.2.1 The Department of Transport Document: Calculation of Road Traffic Noise [10] (CRTN) provides a framework for measuring and calculating sound from road traffic sources. These procedures provide guidance appropriate to the calculation of traffic noise for more general applications e.g. environmental appraisal of road schemes, highway design and land use planning.

4.2.2 CRTN offers a shortened measurement procedure where the corresponding $L_{A10,\ 18hour}$ level can be derived from the arithmetic average of three consecutive L_{A10}, hourly values taken between 10:00 and 17:00 plus a correction of -1dB. The calculated $L_{A10,18hr}$ may then be further converted to an $L_{Aeq,16hr}$ using the acoustic conversion factor from BS 8233:2014 of $L_{Aeq,16hr} = L_{A10,18hr}$ -2dB.

4.2.3 The Transport Research Laboratory document: "Converting the UK traffic noise index $L_{A10,\ 18\ hour}$ to EU noise indices for noise mapping" [11] provides the following formula for converting the $L_{A10,18hr}$ to a night-time $L_{Aeq,8hr}$:

$$L_{Aeq,\ 8hour\ night} = 0.90 \times L_{A10,18hr} - 3.77\ dB$$

4.2.4 The measurements were undertaken on the 17th July 2025 between 05:57 and 07:00 hours and between 10:00 and 13:00 hours. The microphone was attached to a tripod in the free-field at a height of 1.5m in the front garden of No.7 Rose Avenue. The monitoring location is also shown in Figure 01.

4.2.5 The following instrumentation was used for both sets of measurements:

- Rion type NL-52 Sound Level Meter (Serial No. 00710388)
- Rion type NH-25 Pre-amplifier (Serial No. 10931)
- Rion type UC-59 Microphone (Serial No.19664)
- Rion type NC-75 Sound Level Calibrator (Serial No. 35146217)

All equipment was within current periods of calibration and calibration certificates are provided in Appendix A.

4.2.6 The frequency response of the meter was set to "A" and the time response was set to "Fast" and the meter was set to record the L_{eq} and L_{Max} metrics automatically over 15 minute periods. The meter was also set to record the above metrics in 1/3 Octave centre frequency bands.

4.2.7 During the first attended measurement survey (night time) the meteorological conditions were noted to be dry 18° Celsius 100% blanket cloud and no measurable breeze.

4.2.8 During the first measurement survey the acoustic environment was subjectively considered to be primarily attributable to road traffic sound, pedestrian activity and birdsong.

4.2.9 During the second measurement survey (daytime) the meteorological conditions

were noted to be dry 24° Celsius 60% broken cloud and no measurable breeze.

4.2.10 During the second measurement survey the acoustic environment was subjectively considered to be primarily attributable to road traffic, and infrequent pedestrian activity.

4.2.11 Before both measurement surveys were started the instrumentation was field calibrated using a reference sound calibrator to a level of 94.0dB. After the measurement surveys, the instrumentation was checked using the same reference sound calibrator and a value of 94.0dB was also recorded on each occasion.

4.2.12 The measured $L_{Aeq,\ 5min}$ night levels have been combined to give a single figure $L_{Aeq,\ night\ time}$ the maximum noise level measured during these periods. Full measurement results are provided in tabular form in Appendix B.

4.2.13 The values are summarised in Table 4.1 below for the night time attended measurements and Table 4.2 for the daytime attended measurements.

Table 4.1: Night time Measurement Results

Period Commencing	$L_{Aeq,\ T}$	L_{AMax}
17/07/2025 05:57[5]	48.1	65.4

Table 4.2: Measurement Results and Conversion Factors

$L_{A10,3hr}$[6]	Calculated Values dB(A)		
	$L_{A10,18hr}$	$L_{Aeq,16hr}$	$L_{Aeq,8hr\ Night}$
t+2 **L_{10} (3-hour) = ⅓ ∑ L_{10} (hourly)$_t$** **10 ≤ t ≤ 14**	**L_{10} (18-hour) = L_{10} (3-hour) -1dB(A)**	**$L_{Aeq,16h}$ = $L_{A10,18h}$ -2dB**	**$L_{Aeq,\ 8h}$ = 0.90 x $L_{A10,18h}$ – 3.77 dB**
52.9	51.9	49.9	43.0

4.2.14 The higher of the two $L_{Aeq,T}$ values for the night time period level was then adopted as the appropriate value providing a worst case assessment.

[5] Not a complete 16 hour period

[6] Value also determined using CRTN Shortened Measurement Procedure, (Paragraph 43.)

5. ASSESSMENT

5.1 General

5.1.1 The highest L_{Aeq} and L_{AMax} levels have been used to form the basis of the assessment and to determine any glazing and ventilation requirements for the proposed development.

5.2 Site Noise risk Assessment

5.2.1 Levels measured indicate the daytime period level compiled from measurements was up to 49.9dB $L_{Aeq,\ 16Hour}$.

5.2.2 The night time period level was up to 48.1dB $L_{Aeq,\ 8Hour}$ adopted form the (higher value) i.e. attend night time 1 hour measurement.

5.2.3 The highest measured event value was 65.4dB $L_{AMax,f.}$

5.2.4 The measured levels indicate a "negligible risk category" and a level 2 assessment is not necessary.

5.3 Glazing and Ventilation Requirements – Internal

5.3.1 The internal level within a dwelling is dependent on the level arriving at the external façade, the sound insulation properties of the dwelling, (wall, window, roof/ceiling construction) the volume of the room and any furnishings present. The calculation of internal levels is a complex process and details of the individual units (not available at this stage) would be required.

5.3.2 The weakest part of the building envelope is typically the glazing and to meet the internal requirements the glazing specification should be capable of reducing the external noise levels by at least 21dB. Standard double glazing with a performance specification of R_{TRA} 27dB[7] will be sufficient for all habitable rooms.

5.3.3 The indicative glazing specifications are based on windows being closed in order to maintain the required internal noise levels. This introduces the issue of ventilation, which must be assessed separately to comply with Building Regulations. An open window is expected to provide approximately 15dB of façade attenuation, and an external level of 65.4dB(A) would correspond to an internal level of 50.4dB(A).

5.3.4 It is recommended (subject to confirmation of acceptability from a qualified air quality practitioner) that passive ventilators with a minimum performance value of at least 37dB $D_{,n,ew}+C_{tr}$ be fitted to habitable rooms.

5.3.5 During the night an external night time level of 48.1dB $L_{Aeq,8hr}$ outside a bedroom would correspond to an internal level of 33.1dB $L_{Aeq,8hr,}$ while an external level of 65.4dB $L_{Amax,F}$ outside a bedroom would correspond to an internal level of 50.4dB $L_{Amax,F}$. These values do not exceed the threshold values from Approved Document O at which residents would be expected to rely on keeping windows closed during sleeping hours and an overheating assessment is not expected to be required on noise grounds.

5.3.6 To retain the acoustic performance of any bedroom windows any ventilation method to be installed must not increase the internal level of noise above the ambient noise

[7] Table 1, BS 12758:2019 6mm pane /6-16mm/6mm pane R_{TRA} 27dB.

level guideline values from Table 2.2 above. Companies which supply alternative ventilation solutions include Greenwood and Rytons[8] example product brochures of acoustically screened ventilation options are presented in Appendix C.

5.4 External Ambient Levels

5.4.1 During the day the $L_{Aeq,16hr}$ value was 49.9dB $L_{Aeq,T}$. This is below the guideline limit value of 55dB $L_{Aeq,16hr}$ from BS 8233 and no further consideration is given to levels in external amenity areas.

[8] Able Acoustics Ltd makes no representations or guarantees in respect of 3rd party products or workmanship.

6. CONCLUSIONS

6.1 Summary

6.1.1 It is concluded the site maybe suitable for development provided the following issues are considered:

- A level 1 site risk assessment for the proposed layout has been carried out which indicates the site is a negligible risk category.
- The glazing and ventilation specification will need to ensure that the internal noise levels detailed in Table 2.2 are not exceeded.
- Standard double glazing with a minimum performance specification of R_{TRA} 27dB will be acceptable for habitable rooms.
- A ventilation specification with a minimum performance value of at least 37dB $D_{,n,ew}+C_{tr}$ is required for habitable rooms to avoid relying on open windows for ventilation.
- Details of the specific glazing and ventilation measures[9] to be installed must be submitted to the local planning authority in advance.

[9] Details include make, model and acoustic performance data to be obtained from the product provider.

7. REFERENCES

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3. DEFRA, Noise Policy Statement for England (NPSE). March 2010.

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5. British Standards Institution. British Standard 8233: Guidance on sound insulation and noise reduction for buildings, 2014.

6. World Health Organisation. Guidelines for Community Noise. 2000.

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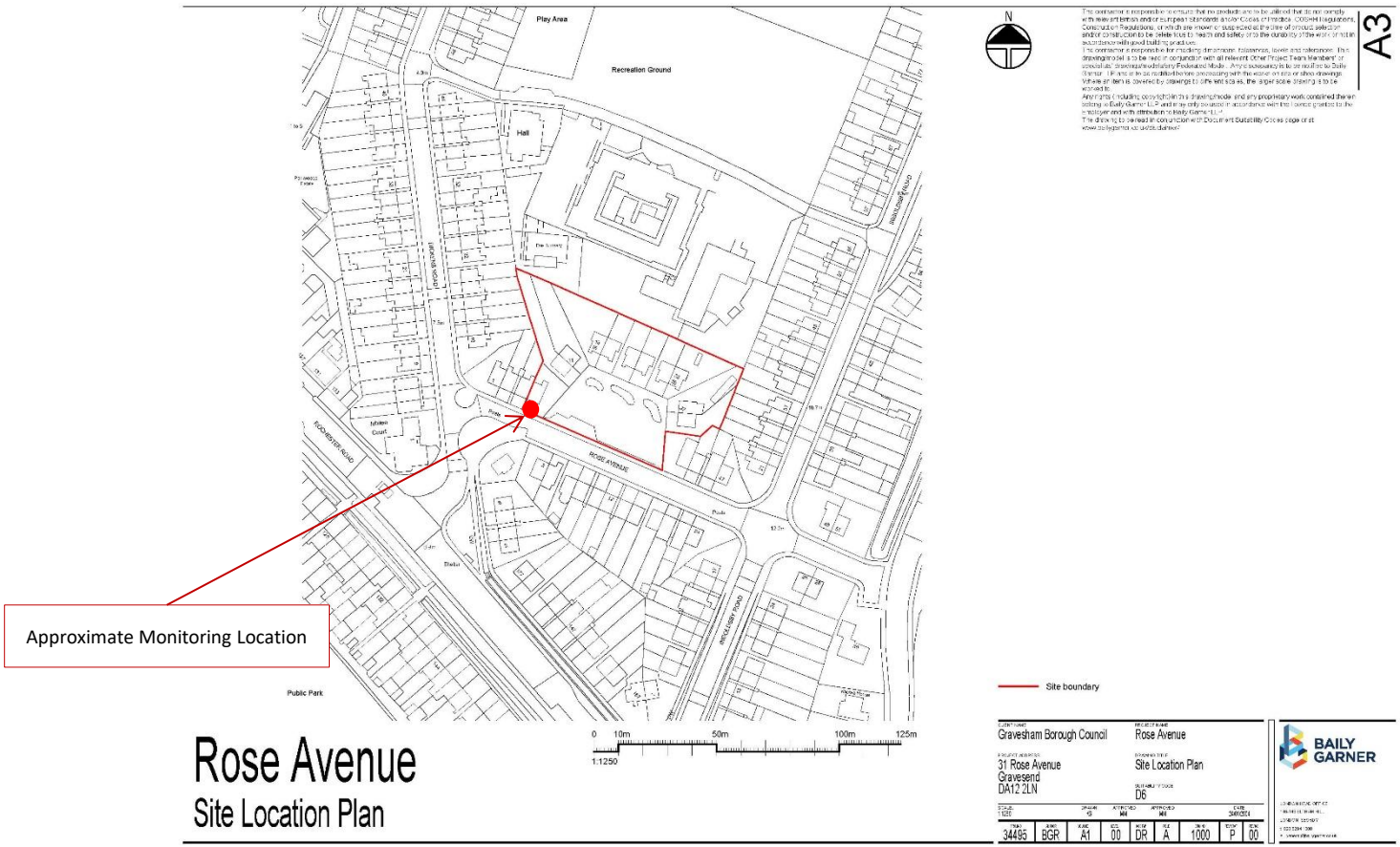
8. Association of Noise Consultants and Institute of Acoustics joint publication: Acoustics Ventilation and Overheating, Residential Design Guide, January 2020.

9. Department for Levelling Up, Housing and Communities, The Building Regulations Statutory guidance: Overheating: Approved Document O, December 2021.

10. HMSO, Calculation of Road Traffic Noise, Department of Transport, Welsh Office, 1988.

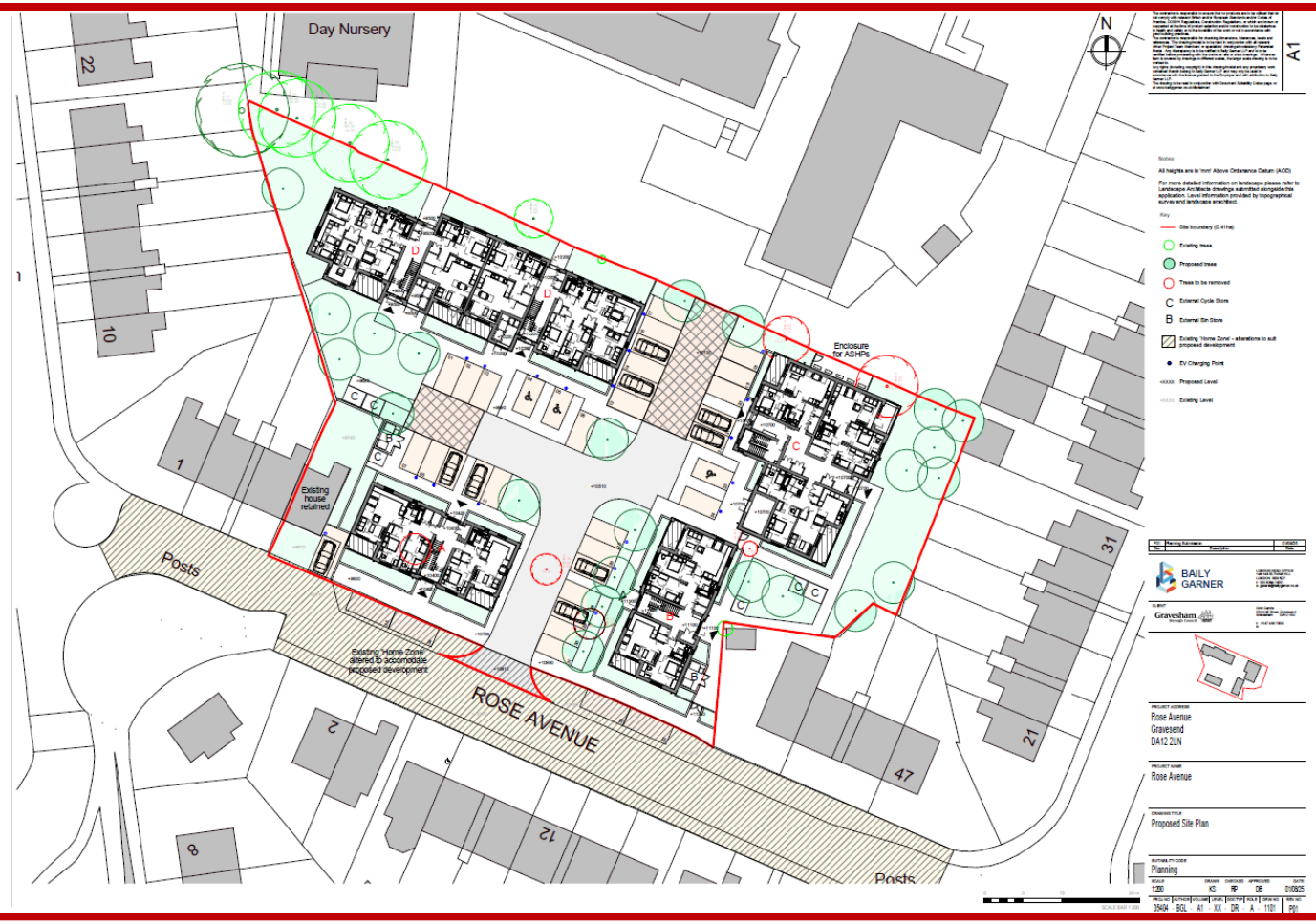
11. Transport Research Laboratory, Converting the UK traffic noise index LA10, 18 hour to EU noise indices for noise mapping, 2002.

FIGURES



Not To Scale Resized From Original Image

Project	No.	Drawing	No.	File	Date
Rose Avenue	P1661	Site Location	Figure 01	P1661/Figures.ppt	06/08/2025



Not To Scale Resized From Original Image

Project	No.	Drawing	No.	File	Date
Rose Avenue	P1661	Proposed Layout	Figure 02	P1661/Figures.ppt	06/08/2025

APPENDIX A

Calibration Certificates

CERTIFICATE OF CALIBRATION

Date of Issue: 25 October 2023 **Certificate Number: TCRT23/1770**

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages
Approved Signatory
K. Mistry

Customer	Able Acoustics Ltd Unit 20 Connect 10 Business Park Ashford TN24 0FE
Order No.	P1000
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	00710388
Rion	Firmware		2.1
Rion	Pre Amplifier	NH-25	10931
Rion	Microphone	UC-59	19664
Rion	Calibrator	NC-75	34334830
	Calibrator adaptor type if applicable		NC-75-022

Performance Class 1
Test Procedure TP 10. SLM 61672-3:2013
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2013 Yes
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013
Date Received 24 October 2023 ANV Job No. TRAC23/10479
Date Calibrated 25 October 2023

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	Initial Calibration		

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 08 January 2025 **Certificate Number: UCRT25/1052**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Customer	Able Acoustics Ltd Kent House 81 Station Road Ashford Kent House TN23 1PP
Order No.	P1000
Test Procedure	Procedure TP 14 Calibration of Sound Calibrators (60942:2017)
Description	Acoustic Calibrator

Identification

Manufacturer	*Instrument*	*Model*	*Serial No.*
Rion	Calibrator	NC-75	35146217

Public evidence of Type Approval Yes Approved by PTB

The calibrator has been tested as specified in Annex B of IEC 60942:2017. As public evidence was available, from a testing organisation responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2017, the sound calibrator tested is considered to conform to all the class 1 requirements of IEC 60942:2017.

ANV Job No.	UKAS25/01016
Date Received	08 January 2025
Date Calibrated	08 January 2025
Previous Certificate	*Dated* Initial Calibration *Certificate No.* *Laboratory*

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

APPENDIX B

Results of Attended Monitoring

Measurement Results

Project Number: P1661
Client: Bailey Garner LLP
Site Location: Rose Avenue, Gravesend

Instrumentation	Serial No.
Rion NL-52 Sound Level Meter	00710388
Rion NH-25 Pre-amp	10931
Rion UC-59 Microphone	19664
Rion NC-75 Calibrator	35146217

Calibration prior to survey:	94.0 dB (re 94.0)
Calibration after survey:	94.0 dB (re 94.0)

Survey 1: Night

Start Time	L_{Aeq}	L_{AMax}	L_{A10}	1/3 Octave Centre Frequency Band (Hz)																						
				50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k
17/07/2025 05:57	47.7	59.8	50.6	49.8	47.3	44.7	44.2	42.8	41.0	40.5	41.5	38.4	38.4	39.4	40.2	41.4	41.3	37.5	34.3	31.3	27.6	28.0	28.6	21.8	19.4	13.0	10.5
17/07/2025 06:02	46.6	55.9	50.4	47.0	44.7	45.2	43.3	38.4	40.2	40.1	41.1	38.7	37.2	37.6	38.8	40.5	40.3	36.4	33.4	30.3	26.2	26.2	26.1	21.0	19.4	24.8	11.3
17/07/2025 06:07	47.9	61.6	51.2	50.9	47.2	46.6	46.8	40.2	42.0	44.4	42.3	39.7	40.5	38.7	40.0	41.0	40.9	37.7	35.2	32.7	29.5	28.5	28.3	23.0	20.1	15.2	11.8
17/07/2025 06:12	47.3	60.0	50.8	50.7	48.1	45.4	46.4	40.3	42.1	40.4	41.5	39.4	37.8	38.2	39.5	40.9	40.5	36.9	34.3	33.5	29.3	28.4	26.1	23.3	21.3	15.1	11.8
17/07/2025 06:17	48.1	58.6	51.7	50.9	49.8	48.7	45.3	39.3	40.3	40.9	41.5	38.8	38.4	38.9	41.0	41.1	40.8	37.4	34.9	33.2	30.6	31.1	25.9	27.1	34.5	24.1	15.6
17/07/2025 06:22	47.8	58.1	50.9	50.3	50.8	46.9	45.4	39.4	40.5	41.6	42.0	38.3	38.2	38.6	40.2	41.2	40.9	37.0	34.5	32.3	29.6	32.1	32.6	27.1	22.7	17.1	11.8
17/07/2025 06:27	47.0	56.5	50.5	52.6	51.0	46.8	44.8	39.6	40.2	40.1	41.0	38.0	37.2	37.1	38.7	40.4	40.7	37.1	34.4	31.9	28.5	27.7	28.5	24.5	23.0	17.4	11.2
17/07/2025 06:32	47.8	57.6	51.4	55.4	52.1	48.9	46.6	40.5	41.9	42.2	42.4	39.0	38.4	38.7	39.9	41.5	41.3	37.3	34.6	31.8	28.5	26.9	27.2	22.9	17.8	14.1	11.6
17/07/2025 06:37	49.7	65.4	52.5	52.4	49.8	49.4	47.5	46.8	45.3	43.2	43.3	41.5	40.5	41.6	41.6	43.9	42.9	38.8	35.7	33.4	32.2	30.4	30.2	26.4	24.5	20.3	17.3
17/07/2025 06:42	49.5	63.7	53.0	51.8	49.8	47.7	46.8	42.3	43.0	43.0	44.2	41.0	39.6	39.7	41.5	43.4	43.1	38.7	36.1	33.8	31.0	31.8	28.5	26.2	26.3	19.6	14.5
17/07/2025 06:47	49.0	62.8	52.5	53.6	51.0	47.4	46.4	42.3	41.9	41.5	42.5	39.2	38.2	39.3	40.3	42.6	42.5	38.4	35.7	33.2	30.4	30.4	36.2	27.6	22.9	20.4	12.8
17/07/2025 06:52	48.2	57.1	51.4	53.2	49.1	47.4	46.8	39.9	41.7	41.7	42.1	39.2	39.1	39.7	40.3	41.9	41.9	37.7	35.3	32.2	29.0	27.6	26.4	24.2	19.4	15.4	12.0
17/07/2025 06:57	47.7	52.0	50.6	49.1	46.0	46.5	45.8	40.0	41.7	40.8	42.6	37.8	37.6	38.8	38.6	41.7	42.1	37.8	34.3	31.5	27.4	23.3	20.8	17.9	17.8	16.7	12.7

Survey 2: Day

Start Time	L_{Aeq}	L_{AMax}	L_{A10}	1/3 Octave Centre Frequency Band (Hz)																						
				50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k
17/07/2025 10:00	50.1	76.2	52.7	54.9	54	49.8	45.7	44.7	45.5	44.4	43.8	41.9	40.3	40.9	41.9	43.6	42.6	39.5	37.7	35.3	34	32.6	33	30.1	26	22.1	19
17/07/2025 11:00	50.9	75.5	53.1	55.6	55	51.2	48	46.3	45.1	45.6	45.8	44.1	42	42.5	42.6	43.8	42.9	40.5	38.7	36.3	34.1	32.6	31.8	30	26.4	23.2	20.2
17/07/2025 12:00	50.2	71.1	53	57.4	56.5	49.9	47.1	45.5	45.2	44.9	44.1	42.4	41.5	41.3	41.9	42.9	42.7	40	37.8	35.8	33.3	32.2	32.3	29.9	26.8	21.8	19.1

APPENDIX C

Product Brochures for Acoustically Screened Ventilation Systems

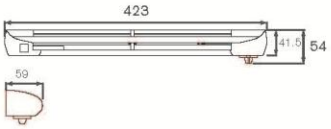
EAR42W

Acoustic window ventilator

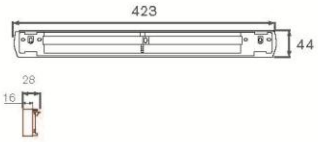
Physical specification

All measurements in millimetres unless otherwise indicated

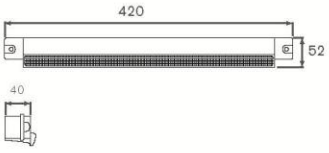
Materials: ABS



Internal



Acoustic spacer



External

Features and benefits

- One of the best performing acoustic window ventilators available in the UK
- Provides an outstanding Dn,e,w; 42dB(A) for areas with high external noise transmission
- Humidity control to regulate supply of fresh air effectively throughout the day in response to changing indoor humidity levels
- Manual override control option for occupants to ensure a comfortable environment at all times
- Upward air deflection to eliminate replacement air causing draughts
- Manufactured from ABS – available in white as standard
- May require add on section in some window installations

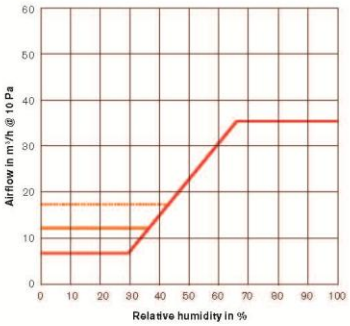
Slot size

Height: 12mm

Length	Central gap	Length
172mm	10mm	172mm

Route slot in window frame as required and screw ventilator over holes.

Performance



Key

EAR² 5-35m³/h

EAR² 17-35m³/h

EAR² 11-35m³/h

Acoustic performance

Dn,e,w: Average weighted performance across frequency range

C: Pink noise

Ctr: Road noise

Models, control options and key data

		Acoustic performance				
Product code	**Controls**	**Dn,e,w**	**Dn,e,w (C)**	**Dn,e,w (Ctr)**	**Equivalent area mm²**	**Colour**
EAR42W *	Bottom	42dB(A)	42dB	42dB	3912	White

* Pricing is variable depending on quantity ordered - please call for details

EHA574
Acoustic Humidity Control Ventilator

GREENWOOD AIRVAC Environmental

humidity control slotvent technical data sheet | EHA574

Humidity control trickle ventilator

Self-regulating internal mechanism

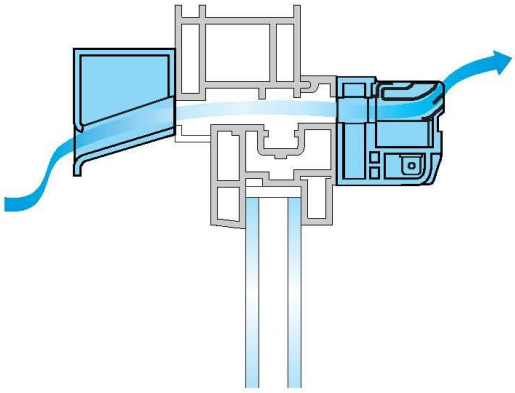
Provides excellent acoustic attenuation

Suitable for use as a through-frame ventilator

The Greenwood EHA humidity sensitive acoustic air inlet provides trickle ventilation helping prevent condensation and building degradation. Designed to offer 4000mm² free area and a permanent regulated airflow throughout the dwelling, the ventilator operates at all temperatures, independent of any power sources.

The vent offers effective protection against noise, providing an attenuation of 44dB in the open setting, which has no effect on flow rates and is suitable for installation where external noise is a problems, such as airports, busy roads and industrial sites.

Supplied as a complete unit, comprising humidity sensitive internal mechanism, acoustic spacer and acoustic canopy, the EHA is quick to install on PVC and timber framed windows. Manufactured from ABS material, the vent is available in white as standard and alternative colours available on request.

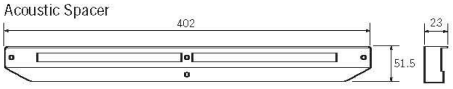


Humidity is the condition of the atmosphere in relation to the water vapour it contains. Water vapour is always present in the air in varying amounts, the amount that the air can hold depends on its temperature, the higher the temperature the more water vapour. The 'dew' point is the temperature at which air containing a certain amount of water vapour becomes saturated and further reduction in temperature would result in condensation.

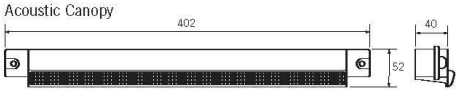
Dimensions (mm)

EHA

Acoustic Spacer



Acoustic Canopy



Models and Physical Specification

Model (All separates supplied as complete unit)	**Free Area** (mm²)	**Footprint Dimensions** (mm)	**Standard Rout Size** (mm)	**Colour**
EHA	4000	420 x 50 x 35		W
Acoustic Spacer	4000	420 x 51.5 x 23		W
Acoustic Canopy	4000	420 x 54 x 49		W

Colour: White (W)

EHAV1 July 2004

EHA574

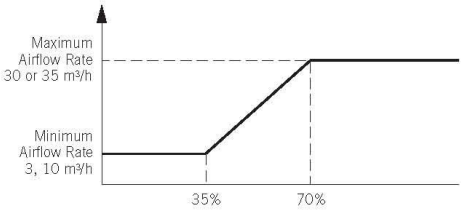
Acoustic Humidity Control Ventilator

GREENWOOD AIRVAC Environmental

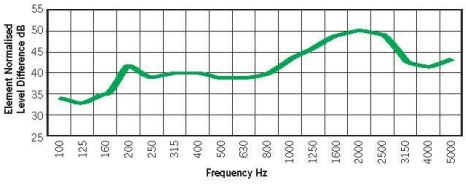
Product Performance

	Min Airflow m³/h	Min Airflow l/s	Max Airflow m³/h	Max Airflow l/s
Flow rates at 10 Pa	3 10	1 3	35 30	10 8
% Relative Internal Humidity*	35%		70%	

*Relative Humidity is the amount of water vapour in the air at any particular temperature compared with the maximum that it will hold at that temperature.



Acoustic Performance



Frequency	100	125	160	200	250	315	400	500
Db	34	33	35	41	39	40	40	39

Frequency	630	800	1000	1250	1600	2000	2500	3150
Db	39	40	43	46	49	50	49	43

Dn,e,w (C;Ctr) = 44(-1;-2) dB

Dn,e,w (C) = 43dB

Dn,e,w (Ctr) = 42dB

Dn,e,w: Average weighted performance across frequency range

C: Pink Noise

Ctr: Road Noise

Full specification detail and test reports are available on request.

Maintenance

Greenwood recommends that any dust be simply removed from the internal mechanism without dismantling.

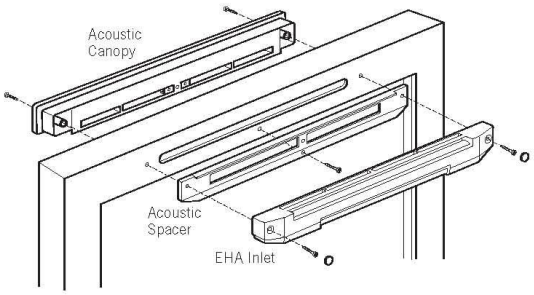
Installation & Fixing Details

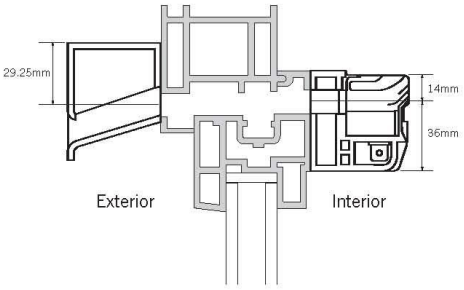
1 Rout slot in window frame 354mm x 12mm.

2 Screw fix acoustic spacer to the internal of the window frame.

3 Screw fix EHA Inlet to the acoustic spacer.

4 Screw fix acoustic canopy to external of window frame.





How to order

Please state:

1 **Model** – EHA574

2 **Colour** – W (white)

4 **Quantity** – 25.

EHA 574W x 25

To order please contact Greenwood Customer Services on 01903 777130

Order lead times available on request.

For further information, please contact Greenwood Technical Services on: 01903 777137

All information believed to be correct at the time of going to press. All goods are sold according to Greenwood Air Management Ltd's standard condition of sales that are available on request. All dimensions in millimetres unless otherwise shown. Greenwood Air Management reserves the right to change specifications and prices without prior notice. Registered trademarks and patents protect greenwood products.

GREENWOOD AIR MANAGEMENT

Greenwood Air Management Ltd Brookside Industrial Estate, Rustington, West Sussex BN16 3LH.
Tel: (01903) 771021 Fax: (01903) 782398 Web: www.greenwood.co.uk Email: info@greenwood.co.uk

an Aliaxis company

MA3051

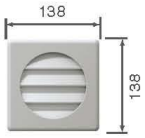
Acoustic wall ventilator

Physical specification

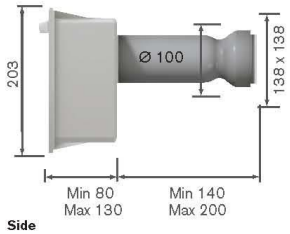
All measurements in millimetres unless otherwise indicated

Weight: 2.65kg

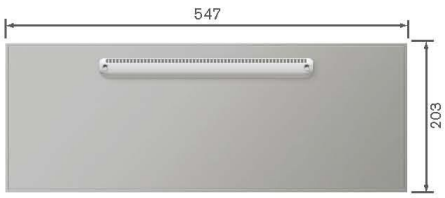
Materials:
PVC: Casing for wall vent, duct, external grille and internal ventilator. Acoustic lining and material inside wall vent.



External grille



Side



Internal

Features and benefits

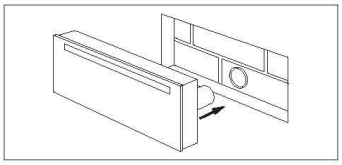
- Highest performing acoustic background ventilator
- Provides acoustic attenuation to Dn,e,w 55dB(A)
- 2500mm² equivalent area performance
- Suitable for external wall thicknesses of 140mm and above
- Can be installed in internal wall constructions of between 100mm and 150mm
- Supplied with internal controllable vent and white/sand external grilles
- Conforms to acoustic requirements of Noise Insulation Regulations (NIR) 1975, one of only a small number of products available in the UK

Installation

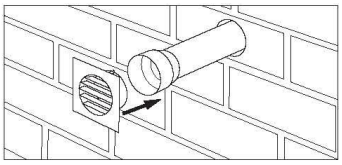
Instructions are provided with product including wall template for cut out.

Bonding compound is required to complete installation.

Protective strip to protect internal unit until decoration is complete within dwelling.



Push into cut out in wall.



Push fit external grille.

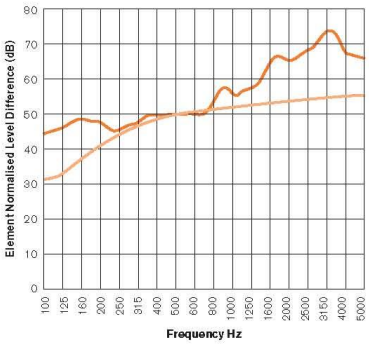
Performance

Key

MA3051

NIR 1975

Acoustic performance
Dn,e,w: Average weighted performance across frequency range
C: Pink noise
Ctr: Road noise



Models, control options and key data

		Acoustic performance			
Product code	**Operation**	**Dn,e,w**	**Dn,e,w (C)**	**Dn,e,w (Ctr)**	**Equivalent area mm²**
MA3051 *	Internal controllable trickle ventilator	55dB	54dB	52dB	2500

* Pricing is variable depending on quantity ordered - please call for details